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Thinning Sugar Beets

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THINNING SUGAR BEETS

W. W. ROBBINS[1]

One of the most readily controllable operations in growing sugar beets, and one which determines to such a very large degree the final yield, is that of *thinning*. Under ordinary conditions, proper thinning is one of the most important steps in securing a good stand of sugar beets. There are, of course, various other important considerations which the grower must bear in mind, in order to produce sugar beets successfully; but they can not all be discussed here.

This circular aims to emphasize the necessity of exercising care in the thinning of beets; it points out the need for instruction and supervision of the labor; it discusses the time to thin, proper spacing, the value of selecting the large seedling, the influence of stand on yield, and the fundamental reasons for the different practices in the thinning operation.

WHY BEETS ARE THINNED

The beet "seed ball," as known commercially, is a corky structure containing from one to five true seeds. A seed ball containing several seeds arises when the flowers are in clusters; in this case, the parts of the several flowers grow together, forming a several-seeded mass, the "seed ball." If a flower stands by itself on the stem, a single-germ beet seed is produced. In an ordinary commercial lot of seed, there is a relatively small percentage of single-germ seeds.

It will be seen from the foregoing description that when one beet seed ball is planted in a place, from one to five plants may grow from it. These young plants come out of the ground so close together that they necessarily compete with each other for space in which to spread their leaves and roots, and for water and plant nutrients. If some of the plants were not removed, there would be insufficient nutrients in the soil to support their best growth; leaf development would be hindered; roots would be small and twisted about each other; and the returns in tons of roots and sugar per acre would be unprofitable. In thinning, the object is to leave the largest and healthiest seedlings, and these so distributed evenly in the row as to permit their normal development. Also, in thinning, weeds in the rows and in places which the cultivator cannot reach should be removed.

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AT WHAT AGE SHOULD BEETS BE THINNED?

It is the general experience of beet growers that the highest yields are secured by thinning beets when they have attained a stage of development indicated by the presence of two to four *true* leaves. In a seedling of this age, there will be, in addition to the two to four true leaves, two seed leaves. Thinning later, when the plants have as many as eight true leaves, may result in injury to the plants that are left. In the first place, by postponement of thinning, the plants have been crowded to such an extent as to be hindered in their growth; and secondly, the root system has attained a growth that is easily disturbed. The smaller the beets when thinned, the less their growth will be checked.

However, very early thinning may be followed by a relatively great loss of beets. The reason for this is that the weakest seedlings often succumb to seedling diseases, the greatest mortality occurring before the plants have developed the second pair of leaves. Normally, there is some natural elimination of the weak plants, and time should be allowed for this natural weeding-out to take place before thinning is done. Otherwise, unknowingly, the weak or diseased seedlings may be left.

A delay in thinning may be justified when the crop is exposed to insect injury, as for instance, when the soil is infested with wire worms, or centipedes, which threaten destruction of the stand after thinning.

There are available some results of experiments on early and late thinning. In one case, beets thinned when they had two to four leaves yielded 1¾ tons more per acre than beets thinned when they had eight to ten true leaves; and 3½ tons more per acre than beets thinned when they had twelve to fourteen true leaves.

The agricultural department of the Great Western Sugar Company reports the following results:

1914—Beets blocked and thinned when 16 days old produced 1596 pounds beets and 167 pounds sugar more per acre than beets blocked and thinned when 31 days old (delay of 15 days).

1923—Beets blocked and thinned when 25 days old produced 845 pounds beets and 91 pounds sugar more per acre than beets blocked and thinned when 32 days old (delay of 7 days).

1924—A delay of 14 days reduced the yield 2744 pounds beets and 645 pounds sugar per acre.

Thinning beets is an operation which should be started promptly, and pushed to as quick a conclusion as possible while soil and weather conditions are favorable. Too frequently, because of delay, the beets in a part of the field become so large that they suffer from the thinning.

The above statements concerning the age at which beets should be thinned, apply particularly to sediment soils. Although there are no experimental data, it is the observation of certain growers on peat lands, that thinning can be delayed much longer on such soils than on sediment soils, without injury to the beets. They even go farther and state that thinning should be delayed. It is claimed that unless the young beets on peat soils have a well-established root system at thinning time, the roots of the seedlings left are likely to dry out in the soil which has become loosened as a result of its disturbance in thinning. Moreover, it appears that there is less twisting of roots of closely adjacent plants in loose soils than there is in heavier soils.

SPACING BEETS

The basic consideration in the distribution of sugar beets is the soil volume in which the plants absorb water and plant nutrients. It is obvious that the spacing in the row can be somewhat closer when the rows are 22 inches apart than when they are 18 inches apart. Moreover, a rich soil will support more beets per unit area than an impoverished soil. No iron-clad rule can be laid down, specifying the distance beets should be thinned, which would cover all the various conditions under which sugar beets are grown. However, experience and experimentation have taught that, on the average and on most soil types, 216 square inches per beet gives maximum yields. This is equivalent to a 12-inch stand in the row with rows 18 inches apart, or to a 10.8-inch stand with rows 20 inches apart. Crowding beets reduces the amount of light coming to the individual plant, and also reduces the soil volume in which the plants feed. In unnecessarily wide spacing, the land is not working to its full capacity. It should be stated at this point that a wide stand reduces the sugar per cent and a close stand elevates the sugar per cent. If the beet plant has ample room in which to grow and develop, it becomes large at the sacrifice of sugar per cent; if it is crowded by close spacing, its size is reduced but the sugar per cent is relatively high.

In tables 1 and 2 are given figures from the Colorado and Nebraska districts of the Great Western Sugar Company, covering the 1925

crop, which show that a spacing in the row, wider than 12 inches, results in loss of yield. (In these tables, the spacing given was determined at harvest time, and it does not represent a spacing secured at thinning.)

TABLE 1

EFFECT OF SPACING ON YIELD, COLORADO, 1925

Average spacing in inches	Weights of beets in ounces	Tons of beets to the acre	Number of contracts
51.1	30.2	5.79	194
33.8	30.3	8.80	451
26.7	30.4	11.20	917
21.9	30.1	13.47	1243
18.8	28.4	14.83	881
16.3	26.9	16.21	360
14.4	24.7	16.80	85
11.9	23.1	19.10	31
Avg. 22.2	30.4	13.38	.....

TABLE 2

EFFECT OF SPACING ON YIELD, NEBRASKA, 1925

Average spacing in inches	Weights of beets in ounces	Tons of beets to the acre	Number of contracts
51.5	35.2	6.70	16
33.9	34.7	10.05	47
26.5	34.9	12.95	194
21.7	33.9	15.35	511
18.7	32.9	17.28	569
16.3	31.0	18.60	212
14.6	29.1	19.58	29
11.5	23.4	19.96	9
Avg. 20.0	33.7	16.47	.....

Let us do some computing as to the influence of stand upon the yield of beets. Of course, we know that many of our plans fall short of realization, but it is only by understanding what the possibilities are, that we can work intelligently to realize the ideal.

With rows 18 inches apart, there are 29,040 feet of row in an acre. If, on the average, there is one beet to every 12 inches, there will be 29,040 beets per acre. If the beets average 24 ounces, the yield will be 21.7 tons. If there is one beet every 14 inches, there will be 24,891 beets per acre, and the yield (on the basis of the beets averaging 24

ounces each) will be 18.7 tons. If there is one beet every 16 inches, there will be 21,180 beets per acre, and the yield (on the basis of the beets averaging 24 ounces each) will be 15.8.

It is known that spacing influences the size of beets. Naturally, wide spacing in the row or between the rows makes for larger beets than close or narrow spacing. However, it cannot be assumed that if the stand is increased from 12 inches to 16 inches, for example,

TABLE 3

YIELDS WITH DIFFERENT SPACING AND DIFFERENT WEIGHTS OF BEETS
(BASED ON 18 INCHES BETWEEN ROWS)

Ounces	Spacing in rows (inches)								
	12	13	14	15	16	17	18	19	20
16	14.52	13.40	14.25	15.08	10.89	10.24	9.68	9.17	8.71
17	15.43	14.24	13.23	12.34	11.57	10.89	10.29	9.74	9.26
18	16.43	15.08	14.00	13.07	12.25	11.53	10.89	10.31	9.80
19	17.24	15.91	14.78	13.79	12.93	12.17	11.50	10.89	10.35
20	18.15	16.75	15.56	14.52	13.61	12.81	12.10	11.46	10.89
21	19.06	17.59	16.43	15.25	14.29	13.45	12.71	12.03	11.43
22	19.97	18.43	17.12	15.97	14.97	14.09	13.31	12.61	11.98
23	20.87	16.26	17.89	16.70	15.65	14.73	13.92	13.18	12.52
24	21.78	20.10	18.67	17.42	16.33	15.37	14.52	13.75	13.07
25	22.69	20.94	19.45	18.15	17.01	16.01	15.13	14.33	13.61
26	23.60	21.78	20.23	18.88	17.69	16.65	15.73	14.90	14.16
27	24.50	22.61	21.00	19.60	18.37	17.29	16.34	15.47	14.17
28	25.41	23.45	21.78	20.33	19.05	17.93	16.94	16.04	15.25
29	26.30	24.29	22.56	21.05	19.73	18.57	17.55	16.62	15.79
30	27.20	25.12	23.34	21.78	20.42	19.22	18.15	17.19	16.34
31	28.12	25.96	24.12	22.51	21.09	19.86	18.73	17.76	16.88
32	30.04	26.87	24.87	23.23	21.78	20.49	19.36	18.34	17.42

the beets will be enough larger to compensate for the decreased number of beets to the acre. Care should be taken to secure a stand of beets rather than to trust in luck that if there is a wide stand, the beets will be sufficiently large to make up for the fewer beets to the acre. High yields are much more often due to good stands than to oversized beets. This is well shown in the yields on plots at the University Farm during 1928. The average yield of six different varieties, each of four replications, was 28.5 tons per acre. This high yield was secured even though the average weight of roots was but 1.9 pounds; but the average number of beets per acre was 29,330, which is a splendid stand.

Table 3 shows the yield of beets which will be obtained with any particular spacing, and average weight of individual beet root.

The figures (12–20) across the top of the table refer to inches in the row, and the figures (16-32) along the left hand side refer to

ounces; the tonnage corresponding to any particular spacing and average weight of beet is found at the intersection of the vertical and longitudinal columns. For example, roots averaging 20 ounces and spaced 16 inches in the row will yield 13.61 tons per acre.

It has been stated that when the rows are 18 inches apart, the *ideal* is a beet every 12 inches, and when the rows are 20 inches apart, a beet approximately every 11 inches. This is possible only when the germination stand is very good. But there are often blanks or "misses" in the germination stand. In this event, there should be an effort to make up for these by spacing the beets closer immediately on either side of a blank space in the row. This will mean that there will be some beets 6 or 8 inches apart in the row. This practice in thinning secures a larger number of beets to the acre, and although the close spacing here and there reduces the size of the individual beets which are crowded, the total yield per acre is increased. The method of thinning just described is particularly useful in fields where the germination stand is uneven, or where there has been destruction of seedlings by disease or cold weather.

If in every 100 feet of row there were two blank spaces, and there are left three extra beets on each side of the blank, then by closer spacing, there would be six extra beets in every 100 feet of row. If each extra beet averages 1½ pounds, the increase would be 1.17 tons.

The progressive beet grower is working for a 100 per cent stand. This means an average of 100 to 110 beets in every 100 feet of row, depending upon whether the rows are 18 to 20 inches apart. Then the land is working to full capacity. The cost of cultivating and irrigating a 60 per cent or a 75 per cent stand is just as great as that of cultivating and irrigating a 100 per cent stand. A poor stand means that blank spaces are being cared for throughout the entire season.

It is the experience of growers and of those who have carefully studied the results of instructions given to labor, that in general, the stand left by the thinner is usually somewhat wider than that asked for. For example, if labor is instructed to leave a 12-inch stand where it is possible to secure such a stand, one may expect a spacing of 13 or 14 inches; the spacing of beets left after thinning is usually wider, seldom ever closer, than that which is instructed be given.

In the foregoing discussion, consideration has been given to the spacing which is usually best based on 18 inches between rows. However, there may be conditions under which it is desirable to have a greater distance between rows. In such cases, the distance between

beets in the row can be less than 12 inches. For example, when rows are 20 inches apart, a spacing of 10.8 inches in the row gives each beet as much soil volume as when the rows are 18 inches apart and the spacing in the row is 12 inches.

LEAVE THE LARGE SEEDLING

It is a common observation that there is great variation in the size and vigor of the different seedlings found in any germination stand. What are the reasons for this? In the first place, there is much variation in the size of the beet seed balls. In the second place, the different seeds in a seed ball vary considerably in size. But more important than the size of the seed ball or of the seed, is the vigor of the germs or young plants within. For example, in a beet ball containing four seeds, the actual dry weight of the individual germs, determined just as they make their appearance at germination, may range from approximately 2 milligrams to 3 milligrams. That this range is in all probability due to a difference in the amount of reserve food in the different seeds is strongly indicated by the observation that in all classes of seed balls the weight of any particular germ in a ball exceeds that of any other germ in that ball which makes its appearance at a later time. In other words, in a seed ball which contains more than one seed, the strongest germ germinates first. Consequently, in any one seed ball, containing several seeds, one germ is stronger and more vigorous than the remainder. Observation bears out the conclusion that this relative difference continues throughout the life of the plant. Evidently, then, with similar care, the large germ becomes the large beet, and the small germ becomes the small beet. The runt beet plants at thinning time remain runts, just like the runt pigs in the litter. This fact should be recognized in thinning, and care be exercised to leave the large seedling.

In one case, an experimenter selected a large seed ball containing five seeds. The five germs were grown under similar conditions. The weights (in ounces) of the five different individual beets at harvest were as follows: 1.9, 5.8, 8.6, 16.4, 29.0. These figures also emphasize the great variation that exists in the different individuals arising from a single seed ball.

The experiment station of the Great Western Sugar Company has for a number of years been making a comparison of the development of beets produced by large and by small seedlings. At the time of thinning, a number of beets, larger than the average, and designated

"large," were selected. They were given the same culture throughout the season, and careful measurements were made throughout the life of the plants. The general results are as follows:

(1) The large seedling develops into a larger beet at harvest than does the small one.

(2) The percentage of beets dying is usually greater among those which are small at the time of thinning than among those which are large at thinning.

(3) The total sugar of beets from large seedlings slightly exceeds that of beets from small ones.

(4) The per cent of tops in terms of the average weight of beets at harvest is smaller in the case of beets from the large seedlings than in that of beets from the small seedlings.

Tests similar to the above were conducted for two successive seasons (1926–27) at the University Farm, Davis, California. In both years, the yield from large seedlings was approximately 35 per cent greater than that from small seedlings.

It would take a number of pages to recite even briefly the experiences of many beet growers testifying to the increased yields that have resulted from leaving the large seedlings at thinning. Several specific cases are here given. Reference to them is made by number, but the names and addresses of the growers may be secured by any one who wishes to learn further details of the growing operation.

1. A 2-acre tract thinned by the owner, who took pains to leave only the big beets, yielded 26½ tons per acre. The remainder of his tract, 737 acres, was thinned in the ordinary way, without special attention to the selection of the largest plants; and the yield on this was 20.8 tons per acre.

2. The grower thinned 32 rows near the center of his field, leaving the big, thrifty plants. Thirty-two rows adjacent were thinned in the ordinary way. The yield on the former was at the rate of 18.44 tons per acre; on the latter, 15.69 tons per acre. This particular grower had 100 acres in this field. If he had used the same care on the whole acreage as he did on the 32 rows, his increased tonnage would have been 275 tons, which, at prices current, would have meant an increase of $1925.00.

3. Thirty-six rows of beets, on which care was used to leave the healthiest and largest plants, yielded at the rate of 22.06 tons per acre. Thirty-six rows of beets adjacent, thinned in the ordinary way, yielded at the rate of 19.35 tons per acre—a loss of 3.61 tons per acre. The grower had 50 acres. Had he used the same care in thinning the 50 acres as he did on 36 rows, he would have harvested 174 tons more.

4. Thirty-six rows of beets, or 2.2 acres, carefully thinned so as to leave the large beets, made a yield of 26.59 tons to the acre, while 6.6 acres thinned in the ordinary way by contract labor made a yield at 21.63 tons to the acre. This was a gain of 4.96 tons to the acre.

5. From 30 rows of beets, which were carefully thinned with special care to leave the big beets, were taken roots at the rate of 21.76 tons per acre. The adjoining 30 rows, thinned by contract labor, yielded at the rate of 19.33 tons per acre. This is a gain of 2.43 tons per acre.

6. Twenty-four rows of beets (1.11 acres) were thinned carefully so as to leave the healthy and large beets; 25 rows adjoining were thinned by the regular contractor. The yield on the carefully thinned plot was at the rate of 27.63 tons per acre, and on the other plot, 23.32 tons per acre. This was a gain of 4.31 tons per acre.

7. "Average" thinning gave a yield per acre of 13.3 tons; thinning in which only the healthy, large seedlings were left gave a yield per acre of 23.7 tons; and thinning in which only the weak seedlings were left gave a yield per acre of 9.2 tons.

8. The grower stopped his laborers in the midst of a thinning operation and explained to them that in thinning the next 36 rows, they were to take pains to leave the big beets. As a check on these 36 rows, he selected just beside the test plot, 36 rows which had been thinned immediately preceding the test plot. The yield per acre on the check plot was 14.7 tons, on the test plot, 17.3 tons, the difference being 2.6 tons per acre.

9. The results of selective thinning obtained in different territories served by the American Beet Sugar Company have been reported by Mr. A. W. Skuderna, Superintendent of Agricultural Research. They are summarized in table 4.

TABLE 4

EFFECT OF SELECTIVE THINNING ON YIELD

Vigor of plants left at thinning	Arkansas Valley, Colorado, tons to the acre	Mason City, Iowa, tons to the acre	Hector, Minnesota, tons to the acre	East Grand Rapids, Minnesota, tons to the acre
Strong	15.07	14.44	11.16	15.49
Average	12.58	13.26	9.36	13.01
Small	9.56	10.71	9.13	9.42

Thus it is well demonstrated that increased yields result from leaving the large seedling at thinning, and that the extra cost in labor necessary is compensated for several times over. There is no easier way to increase profits from a beet crop than that of leaving the largest and healthiest beets.

METHODS OF WORK BY THINNERS

Almost all thinning of beets in California is done by Mexicans, together with a few Filipinos, Japanese, and Hindus. These workers use a short-handled hoe, crawling along the rows on their hands and knees. Usually a worker takes two rows at a time; each does his own blocking and thinning. Generally speaking, there is much room for improvement in the method of work of thinners. Observation of their methods shows many glaring faults, which should and can be corrected. Some workers by carelessly dragging a foot or knee along a row, destroy many plants. Others tend to cut too deeply with the hoe, removing an unnecessarily large amount of soil from the row and from around the beets. In many instances a trench is left down the row, with sharp sides made by the cut of the hoe, and the young plants, with much of their roots exposed, remain prostrate and dangling. The young beet should not be left standing on a small block of earth which will dry out rapidly at the sides. By the proper use of the hoe, the surplus beet plants and the weeds are cut off, and the soil and the desired beets are left in their original position. The cut made by the hoe should be only deep enough to come below the crown of the plants to be removed.

Many thinned beets die in the scorching sun, because, as related above, they have been left dangling by a mere thread of a root, with the soil drawn away from them by the hoe. The plant should be disturbed as little as possible and kept in an erect position. Soil should be pulled around the root of each beet which is left at thinning. This is indeed an important factor in securing an increased yield.

Some workers use an unnecessarily wide hoe. It is true that greater speed is made with such a tool, but most certainly at the cost of reduced yield. Closer spacing will be secured if the hoe blade is not over six or seven inches wide. Several very successful growers in the Delta region, on loose peat soil, do not allow a hoe in the field. It is possible, in this very loose soil, to block and thin with the hands. This method is to be commended in soils which make it possible.

In the case of contract labor, speed is uppermost in the mind of the worker. Almost always, as a consequence, the beet crop suffers. The thinner attempts to cut out, rather than pull out, as many beets as possible, and, in doing so, often widens the spacing or cuts too close to the beet which he wishes to leave. Moreover, he is making a slash with the hoe ahead of him in the row, with his eye directed

forward, while with the other hand he is blindly feeling his way in the small block of beets just left in an attempt to remove all but one beet from this block. In this operation he all too frequently removes the largest beet, which is the one most easily grasped, or he leaves "doubles."

As stated above, many workers attempt to block and thin two rows at a time. Field tests demonstrate conclusively that better stands are secured when one row at a time, rather than two, is blocked and thinned, for in the former case, the worker's attention is more concentrated on his job.

The method of thinning beets employed in Europe, in the Middle West, and in the Rocky Mountain States, is one involving two distinct operations. These are (1) *blocking* or *spacing,* and (2) *thinning proper.* Blocking is done with a long-handled hoe; thinning is done by hand. It is the writer's conviction that this method is superior to that commonly practiced in California. It has a tendency to compel the thinners to leave a beet in the block, the stand is usually more uniform, and the spacing can be performed when the beets are still too small to be thinned.

The blocking should precede thinning by several days. During this interval, the plants cut out have an opportunity to wither, thus making the blocks more visible. Moreover, in blocking, a certain amount of competition of seedlings is removed, and the plants left standing in the blocks can make more rapid growth. By thinning in two operations, each worker has but one operation to think about. The blocker can give his undivided attention to spacing; the thinner, working as he does without a hoe, can direct his attention to thinning each block and leaving in it the largest and most thrifty beet. Blocking and thinning in two operations cost slightly more than when done simultaneously, but the increased yields more than compensate for the extra cost. It will be a distinct step forward in California beet culture if the long-handled hoe is generally adopted, and thinning is done in two distinct operations. Once labor has become accustomed to this method, it will be reluctant to go back to the present practice.

DOUBLES

When two beets grow very close together, the development of both of them is often hindered, and their combined weight usually does not equal the weight of one beet left standing at that point. In some soils, particularly heavy ones, the roots of doubles coil about each other. It appears that doubles in the lighter types of soil are not as

undesirable as in heavier soils. Doubles should be removed with the hand; it is better to leave them than to attempt their removal with a hoe. Many times the laborer cuts off both plants, instead of one, when he tries to remove one of the doubles with the hoe. In removing a double, care should be taken to leave the healthier and larger of the two plants.

SUPERVISION OF LABOR

It is safe to say that no single effort on the part of the sugar beet grower will bring as large returns as the proper instruction and supervision of the labor at the time the crop is thinned. There should be an attempt to instruct labor, and to explain definitely how to thin and why. The grower should not take it for granted that his labor is experienced. Not only must definite instruction be given, but the quality of the work must be checked frequently, for one cannot assume that because labor has been started right, it will continue as first directed. Carry a measuring tape into the field and frequently check up on the number of plants that are being left per 100 feet of row.

The grower need not stand over labor like a section boss; and his supervision need not be harsh criticism. Laborers must be treated as human beings. But the grower must be in the field every day, and if possible make a careful and actual check of the work. Labor will be careless and indifferent if the grower is careless and indifferent. Labor will do satisfactory work if it is properly instructed and supervised.

Many growers leave the job of supervision to the sugar company fieldman, who has many fields to look after. Necessarily he cannot give any one the close attention that the grower can.

Mr. G. E. Bensel, formerly Director of the Department of Agricultural Research of the Spreckels Sugar Company, and an experienced beet grower, states: "The thinning is a very delicate operation, probably the most important of all operations in sugar beet culture, because after the crop has been injured by poor thinning, there is no subsequent operation which can correct the damage, and also because the final outcome depends chiefly upon the quality and quantity of beets left in the field. For this reason, the thinning requires the utmost attention on the part of the grower, his continuous presence while this important work is being performed by disinterested laborers, who are trying to fulfill the contract with the least possible work, travelling fast in order to reach the end of the row, leaving

many doubles, and destroying many properly placed beets, which, if they had remained, would have materially increased the yield. I have often noticed that beet growers, in order to save a day's wages, ride a cultivator or perform some other work on the farm while a large crew of men are thinning his crop without any supervision and perhaps, in certain instances, are injuring his crop to the extent of ten or twenty times a man's salary.

"Lack of supervision on the part of the grower is principally due to the fact that he does not realize the importance of the work. In most cases he starts the crew and then leaves them to finish the work as they see fit. By personal supervision, the farmers will find at the completion of the work, that the time was well spent, because they will have a more even stand, more beets per acre, fewer doubles, and fewer weeds—all factors which will contribute very materially to increase the yield and the gross return to the grower."

In order further to emphasize the value of supervision and better to judge whether or not it pays in dollars and cents, let us cite cases. With rows 20 inches apart, there are 26,136 feet of row to the acre. If the thinners leave 80 beets to 100 feet of row, there will be 20,880 beets to the acre. If we assume that the average weight of a beet is 24 ounces, the tonnage with this stand will be 15.6. If, under careful supervision, the labor leaves 100 beets to 100 feet of row instead of 80, there would be 26,136 beets to the acre, equivalent to 19.6 tons. This represents a difference of four tons to the acre, the value of which would pay for considerable supervision. In the case cited above, if the labor can be induced to leave but 10 more beets per 100 feet of row, the increase resulting would be approximately two tons. A slight calculation will demonstrate to the grower that he can well afford to spend considerable energy and money in order that he may secure a good thinned stand.

INCENTIVE TO THE BEET WORKER

It is the practice of many growers and sugar companies to stimulate a better quality of labor by offering bonuses or prizes. These should go to the laborer who actually performs good work, not to the contractor. In one beet territory, it has been the plan of many growers to insert in the contract a bonus clause, which provides that the grower will pay, in addition to the regular basic rate, an extra sum per acre for each ton more than an average yield of a certain specified number of tons per acre. This requires the determination of the percentage of stand before and after thinning, but the additional effort is justified by the better stand that finally remains.

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